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STATISTICAL ANALYSIS OF THE ECONOMIC DEVELOPMENT OF THE CHEMICAL INDUSTRY IN THE CONDITIONS OF MODERNIZATION OF THE ECONOMY

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In this article, the statistics of the economic development of the chemical industry in the conditions of modernization, the main efficiency indicators and trends that determine the current state of the industry are researched. Also, the impact of modernization on the economic performance of the industry and various aspects of its future potential are highlighted.

KEYWORDS*: Chemical Industry Growth, Economic Modernization, Production Volume Increase, Investment Inflows, Technological Innovation, Sustainable Energy Consumption, Export Capacity Expansion, Workforce Automation.*

INTRODUCTION

The chemical industry plays a crucial role in modern economies, contributing significantly to GDP growth and industrial diversification. Over the past decade, the global chemical sector has seen consistent growth driven by innovation, technological advancements, and increasing demand for sustainable products.

Global chemical production is expected to grow by an average of 1.7% in 2023, driven by a 7.5% increase in chemical production in China, driven by strong domestic demand and a recovery in exports. Other regions saw declines in the industry, with the European Union recording a 7.6% decline and the United States recording a 1.0% decline.1

As China continues to develop, chemical industries in Japan, South Korea and Germany have faced significant declines in production. For example, chemical production in Germany fell by 9.7%, due to high energy costs and weak industrial demand.2

The statistics cited above illustrate the disparity in chemical industry performance globally, with modernization efforts in technology and sustainability helping some regions while others struggle with rising energy prices and demand recovery. This provides a framework for analyzing how modernization policies can help stabilize and stimulate growth going forward.

This modernization process, which includes efforts to improve operational efficiency, reduce environmental impact, and integrate advanced technologies, is shaping the future of the chemical industry. Statistical analysis serves as an important tool to measure the impact of these modernization efforts, providing insight into regional disparities, production trends, and economic contributions. By evaluating the resulting statistical data, policymakers and industry leaders will be able to identify growth opportunities and implement strategies that will enhance competitiveness and sustainability in the sector .

[1] *https://report.basf.com/2023/en/combined-managements-report/basf-groups-business-year/economic-environment/chemical-industry.html (Chemical Industry - BASF Report 2023)*

[2] *https://report.basf.com/2023/en/combined-managements-report/basf-groups-business-year/economic-environment/chemical-industry.html*

In order to further develop the chemical industry in our country, the President of the Republic of Uzbekistan signed Resolution No. PD-4265 "On measures to further reform the chemical industry and increase its investment attractiveness" on April 3, 2019. 3

The resolution approved the program for the development of the chemical industry for 2019-2030, which was optimized and supplemented with new promising projects by Uzkimyosanoat JSC together with the Ministry of Economy and Industry of the Republic of Uzbekistan and the Ministry of Investments and Foreign Trade, and provides for the implementation of 31 investment projects with an estimated value of 12.1 billion US dollars, including 1.7 billion US dollars in foreign direct investments and loans.

In recent years, measures have been taken to determine the main directions of further development of the industry through the implementation of investment projects aimed at the financial and economic recovery of chemical industry enterprises and stabilization of their activities, modernization of existing production facilities, construction of new capacities for deep processing of hydrocarbon raw materials and mineral resources, as well as expanding the nomenclature of high-value-added chemical products being produced.

At the same time, the implementation of projects aimed at the rapid development and diversification of the chemical industry requires, first of all, effective measures to increase the investment attractiveness of the sector by reducing the state's stake in enterprises through the sale of state assets to private ownership, introducing modern methods of corporate governance, international standards of financial reporting, and improving the management structure of enterprises.

Description Of Projects Planned to be Implemented in our country for the development of the Chemical Industry in 2019-2030

Million US dollars

T/r	Project name	Total Project Cost	Including On Funding Sources		
			Own Funds	Foreign Direct Investment	Loans From Financial Institutions
	TOTAL (31 projects)	**12,072.5**	**1 141.25**	**1,748.35**	**9 182.9**
1	Investment projects aimed at expanding mineral fertilizer production capacity (12 projects)	3,564.0	365.9	964.5	2,233.6
2	of the production of polymer products (3 projects)	7,040.1	576.3	524.0	5,939.8
3	Investment projects for the production of new types of chemical products and the expansion of existing ones for sectors of the republic's economy (16 projects)	1,468.4	199.05	269.85	1,009.5

The table shows that the analyzed chemical industry projects are heavily dependent on external financing, in particular loans from financial institutions, which constitute the bulk of financing across all categories. Foreign direct investment also plays a significant role, especially in the production of mineral fertilizers. The relatively small share of own funds indicates that the industry is dependent on external sources to implement its modernization and expansion efforts. This pattern explains the importance of strategic partnerships and financial support for the continued growth and development of the chemical sector.

In our country, chemical enterprises produced 15.7 trillion soums of commodity products (103.8 percent of the business plan, growth rate - 97.4 percent) in 2023. A total of 1,410.2 thousand tons of mineral fertilizers were produced in net terms, of which 1,103.4 thousand tons of nitrogen, 108.8 thousand tons of phosphorus and 198.0 thousand tons of potash fertilizers were produced.

Also, in 2023, compared to the corresponding period in 2022, the production volumes of low-density ammonium nitrate (NANP) increased by 4.2 thousand tons, soda ash by 6.5 thousand tons, sodium nitrate by 1,158 tons, sodium cyanide by 1,121 tons, and KMS by 522 tons.

The export volume in this industry amounted to 495.2 million dollars, or 100.4% compared to the plan, with a growth rate of 102.7%. Of this, mineral fertilizers worth 315.9 million dollars (80.6% compared to the plan) and other types of chemical products worth 179.2 million dollars (177.6% compared to the plan) were exported. The main export volumes were carried out in the directions of Kazakhstan, Tajikistan, Afghanistan, Turkmenistan, Russia, Lithuania, Latvia, Romania and Turkey (82.3%). At the same time, the

[3] *https://lex.uz/ru/docs/-4271630*

main part of the export of potash products was to Lithuania, Latvia, Iran, Turkey, Indonesia, Japan, Malaysia, Vietnam and the Philippines (68.0%), and the export of soda ash to Kazakhstan and Turkmenistan (78.3%).

Within the framework of 24 projects included in the investment program, 524.7 million dollars were disbursed, the plan was fulfilled by 103.1%, the growth rate was 190.5%. Of this, foreign direct investment amounted to 490.6 million dollars (105.9%), and loans under state guarantees amounted to 1.6 million dollars (100%).
Under the localization program, 2,924.6 billion soums of products were produced within the framework of 34 projects, and the plan was fulfilled by 103.6%. Of the 31 projects included in the program, 26 have a localization level of 100 percent and are intended to be produced using local raw materials.

Placing of mineral fertilizers on the exchange - in 2023, a total of 3,909.0 thousand tons of mineral fertilizers were placed on the exchange in physical form for consumers of the republic, of which 1,939.7 thousand tons were sold, including 1,576.7 thousand tons of nitrogen fertilizers, 224.7 thousand tons of phosphorus fertilizers, and 138.3 thousand tons of potash fertilizers.

Forecast of Growth Parameters of Chemical Industry Production in 2023-2024[4]

t/r	Indicators	unit of measurement	2018 (fact)	2023	2024	2025
1	Production volume	Billion Soums	4,336.5	13105	14631	17462
	growth rate (compared to the previous year)	%	100	110.9	111.6	119.3
2	The volume of investments made	Million $	467	1192.1	12.73	1262.6
3	Export volume	Million $	185.4	468.2	586.7	670.4
4	Volume of locally produced products	Million $	136	2555.2	2584.6	2755.4
5	New jobs created	Person	1 511	1546	1022	1260
6	Electricity demand	Million Kwh	3,080.7	4364.5	4344.9	4375.3
7	Natural gas demand	Million Cubic Meters	2,281.3	3780.1	4182.9	4193.1

The table provides an overview of the key performance indicators, production volume, investments, exports and other important indicators of the chemical industry for the period from 2018 to 2025. The production volume in the sector is expected to increase from 4,336.5 billion soums in 2018 to 17,462 billion soums by 2025, with a steady annual growth rate of over 110 percent. This indicates a strong industrial expansion due to modernization and investment efforts.

Investments in the industry are showing significant growth, from $467 million in 2018 to a projected $1,262.6 million by 2025.

Export figures show consistent growth, rising from $185.4 million in 2018 to a projected $670.4 million by 2025. This reflects the industry's increasing competitiveness in international markets and its contribution to the national economy.

Domestic production is growing dramatically, from $136 million in 2018 to $2,755.4 million by 2025.
The number of new jobs created shows fluctuations, reaching 1,546 in 2023, and slightly decreasing in 2024 and 2025. This indicates a change in labor needs in the process of automation and modernization.

Electricity and natural gas consumption are constantly growing, reflecting the increasing energy demands of rapidly developing industries. In particular, electricity demand is projected to increase from 3,080.7 million kWh in 2018 to 4,375.3 million kWh in 2025, while natural gas consumption is projected to increase from 2,281.3 million cubic meters to 4,193.1 million cubic meters over the same period.

Significant increases in production, investment and exports demonstrate the positive impact of modernization efforts. Growing energy consumption highlights the need for sustainable energy solutions as industry continues to expand. Despite fluctuations in job creation, the overall outlook points to strong economic growth and increased global competitiveness.

Statistical analysis of the economic development of the chemical industry in the context of economic modernization shows a sector undergoing significant changes. As a result of the integration of new

[4]*Formulated by the author based on the information obtained*

technologies, increased investment and a focus on sustainable practices, the chemical industry is becoming an important pillar of economic growth. The data highlights the steady growth in production volumes, investment flows and export potential as a result of modernization efforts aimed at increasing competitiveness and efficiency.

As industry develops, reliance on external financing, particularly loans and foreign investment, underscores the importance of international cooperation in driving growth. At the same time, modernization has placed increasing pressure on energy resources, with electricity and natural gas consumption expected to increase significantly.

The role of the chemical industry in the modernization of the economy is clear: it not only ensures industrial growth, but also contributes to job creation and technological innovation. Moving forward, addressing issues such as energy consumption and the balance between automation and job creation will be key to ensuring this growth. The continued focus on modernization, based on accurate statistical analysis, will ensure that the chemical industry remains a driving force in the global economy.

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